

ASSIGNMENT 2

Textbook Assignment: "Antennas," chapter 2, pages 2-1 through 2-32.

- 2-1. Electromagnetic radiation from an antenna is made up of what two components?
1. E and H fields
 2. Ground and sky waves
 3. Vertical and horizontal wavefronts
 4. Reflected and refracted energy
- 2-2. What determines the size of a transmitting antenna?
1. Transmitter power
 2. Available space
 3. Operating frequency
 4. Distance to be transmitted
- 2-3. Most practical transmitting antennas are divided into two classifications, Hertz and Marconi.
1. T
 2. F
- 2-4. Hertz antennas are designed to operate at what wavelength in relationship to their operating frequency?
1. Quarter-wave
 2. Half-wave
 3. Three quarter-wave
 4. Full-wave
- 2-5. Marconi antennas are used for operating frequencies below what level?
1. 10 MHz
 2. 6 MHz
 3. 4 MHz
 4. 2 MHz
- 2-6. All antennas regardless of their shape or size have how many basic characteristics?
1. 1
 2. 2
 3. 3
 4. 4
- 2-7. The ability to use the same antenna for both transmitting and receiving is known by what term?
1. Gain
 2. Reciprocity
 3. Directivity
 4. Polarization
- 2-8. The ability of an antenna or array to focus energy in one or more specific directions is represented by a measurement of what antenna property?
1. Signal Strength
 2. Reciprocity
 3. Directivity
 4. Polarization
- 2-9. The gain of a transmitting antenna is 9 dB, what will the gain be for the same antenna used for receiving?
1. 9 dB
 2. 6 dB
 3. 4 dB
 4. 3 dB
- 2-10. Which, if any, of the following components of a radiated electromagnetic field determines its direction of polarization?
1. H lines
 2. E lines
 3. Angle of Propagation
 4. None of the above
- 2-11. Over long distances the polarization of a radiated wave changes, at what frequencies will this change be the most dramatic?
1. VLF
 2. LF
 3. MF
 4. HF

2-12. A transmitting antenna at ground level should be polarized in what manner to achieve best signal strength?

1. Horizontally
2. Vertically
3. Circularly
4. Linearly

2-13. What term describes the distance a wave travels during the period of one cycle?

1. Wavelength
2. Frequency
3. Travel time
4. Radiation rate

IN ANSWERING QUESTIONS 2-14 AND 2-15, REFER TO FIGURE 2-4 OF THE TEXT.

2-14. The points of high current and voltage are best described by which of the following terms?

1. Peaks
2. Crescents
3. Loops
4. Highs

2-15. The points of minimum voltage and minimum current are represented by which of the following terms?

1. Lows
2. Valleys
3. Descents
4. Nodes

2-16. An antenna at resonance will transmit at maximum efficiency; an antenna that is not at resonance will lose power in which of the following ways?

1. Skin effect loss
2. Heat loss
3. Ground absorption
4. Wave scattering

2-17. An antenna that radiates energy in all directions is said to have what type of radiation pattern?

1. Isotropic
2. Anisotropic
3. Bysotropic
4. Circumstropic

2-18. An antenna that radiates energy more strongly in one direction than another is said to have what type of radiation pattern?

1. Isotropic
2. Anisotropic
3. Bysotropic
4. Circumstropic

2-19. When viewing a radiation pattern graph, you can expect the areas of maximum and minimum radiation be identified by which of the following terms?

1. High and low probes
2. Maximum and minimum points
3. Major and minor lobes
4. Positive and negative lobes

2-20. If an antenna is too short for the wavelength being used, what electrical compensation must be introduced for the antenna to achieve resonance?

1. Lumped resistance
2. Lumped capacitive reactance
3. Lumped inductive reactance
4. More power

2-21. If an antenna is too long for the wavelength being used, what electrical compensation must be introduced for the antenna to achieve resonance?

1. Lumped resistance
2. Lumped capacitive reactance
3. Lumped inductive reactance
4. Less power

2-22. A ground screen is a series of conductors buried 1 or 2 feet below the surface in a radial pattern and is usually of what length in comparison to the wavelength being used?

1. One-quarter wavelength
2. One-half wavelength
3. Three-quarter wavelength
4. Full wavelength

- 2-23. When would a counterpoise be used?
1. When easy access to the antenna base is necessary
 2. When the surface below is solid rock
 3. When the surface below is sandy ground
 4. All the above
- 2-24. Capacitive top-loading helps to increase which of the following antenna characteristics?
1. Bandwidth
 2. Power-handling
 3. Directivity
 4. Radiation efficiency
- 2-25. What is the most limiting characteristic of the Yagi antenna?
1. Power-handling
 2. Narrow bandwidth
 3. Physical size
 4. Lack of directivity
- 2-26. In general, log-periodic antennas have which of the following characteristics?
1. Medium power handling capabilities
 2. High gain
 3. Extremely broad bandwidth
 4. All the above
- 2-27. A typical vertical monopole log periodic antenna designed to cover a frequency range of 2 to 30 MHz will require approximately how many acres of land for its ground plane system?
1. 1 acre
 2. 2 acres
 3. 3 acres
 4. 4 acres
- 2-28. A sector log-periodic array can act as an antenna for a minimum of what number of transmit or receive systems?
1. 1
 2. 2
 3. 3
 4. 4
- 2-29. The most distinct advantage of the rotatable log-periodic antenna is its ability to perform what function?
1. Rotate 360 degrees
 2. Rotate from horizontal to vertical and back
 3. Ability to handle high transmitter power
 4. Ability to produce high antenna gain
- 2-30. What is the average power handling capability of an Inverted Cone antenna?
1. 20 kw
 2. 30 kw
 3. 40 kw
 4. 50 kw
- 2-31. What determines the gain and directivity of a Rhombic antenna?
1. Transmitter power
 2. Antenna height
 3. Radiated wave interaction
 4. Transmitted frequency
- 2-32. Most Whip antennas require some kind of a tuning system to improve bandwidth and power handling capabilities.
1. T
 2. F
- 2-33. Why are UHF and VHF antennas on board ship installed as high as possible?
1. To prevent radiation hazard to personnel
 2. To prevent radiation hazard to ordinance
 3. To increase power handling capabilities
 4. To prevent unwanted directivity in the radiation pattern from mast structures
- 2-34. The central feed section for both the biconical and center-fed dipole are protected by what type of covering?
1. SCOTCHCOAT
 2. RTV
 3. Laminated fiberglass
 4. Rubber shield

- 2-35. The adjustable stub on the AS-390/SRC uhf antenna is used to adjust what antenna characteristic?
1. The counterpoise angle
 2. The input impedance
 3. The radiation angle
 4. The feed point
- 2-36. The OE-82B/WSC-I(V) antenna group uses what type of polarization?
1. Vertical
 2. Horizontal
 3. Right-hand circular
 4. Left-hand circular
- 2-37. The AN/WSC-5 (V) shore station antenna consists of what number of OE-82A/WSC-1 (V) assemblies?
1. 1
 2. 2
 3. 3
 4. 4
- 2-38. What does the acronym LPI stand for?
1. Low power interference
 2. Low probability of intercept
 3. Low phase intercept
 4. Last pass intercept
- 2-39. The reflectors for the AN/WSC-6 (V) are mounted on three-axis pedestals and provide auto tracking using what scanning technique?
1. Conical
 2. Peripheral
 3. Vertical
 4. Horizontal
- 2-40. Antenna tuning is accomplished using what piece or pieces of equipment?
1. Couplers
 2. Tuners
 3. Multicouplers
 4. All the above
- 2-41. Antenna multicouplers are used to match more than one transmitter or receiver to what number of antennas?
1. 1
 2. 2
 3. 3
 4. 4
- 2-42. The AN/URA-38 antenna coupler is an automatic tuning system primarily used with which radio transmitter?
1. AN/WSC-3
 2. AN/URT-23
 3. AN/URC-80
 4. AN/FRT-84
- 2-43. The AN/SRA-57 coupler group operates in which of the following frequency ranges?
1. 2- 6 Mhz
 2. 4-12 Mhz
 3. 10-30 Mhz
 4. 40-60 Mhz
- 2-44. How many channels are provided with the AN/SRA-12 multicoupler?
1. 4
 2. 5
 3. 6
 4. 7
- 2-45. What type of radar would use a truncated paraboloid reflector that has been rotated 90 degrees?
1. A surface search
 2. An air search
 3. A navigation
 4. A height-finder
- 2-46. Of the following methods, which is NOT used to feed a cylindrical paraboloid reflector?
1. A linear array of dipoles
 2. A slit in the side of a waveguide
 3. A thin waveguide radiator
 4. A quarter-wave stub

- 2-47. The elements of a broadside array are spaced one-half wavelength apart and are spaced how many wavelengths away from the reflector?
1. One-eighth
 2. One-quarter
 3. One-half
 4. Three-quarter
- 2-48. What is the advantage, if any, to offsetting a feedhorn radiator for a parabolic dish?
1. A broader beam angle
 2. The elimination of shadows
 3. A narrower beam angle
 4. No advantage
- 2-49. What is the range in nautical miles of the AN/GPN-27 radar?
1. 55
 2. 75
 3. 105
 4. 155
- 2-50. What is the purpose of the jackscrew on the AS-3263/SPS-49(V) antenna?
1. To adjust the beam width
 2. To vary the antenna feed horn focal distance
 3. To adjust the beam elevation angle
 4. To lockdown the antenna for PM
- 2-51. The OE-172/SPS-55 antenna normally operates in the linearly polarized mode, for what reason would you use the circular polarized mode?
1. To compensate for the ships pitch and roll
 2. To prevent jamming
 3. To reduce return echoes from precipitation
 4. To achieve over the horizon coverage
- 2-52. Which of the following is NOT a mode of operation for the AN/SPN-35A radar set?
1. Final
 2. Dual
 3. Surveillance
 4. Simultaneous
- 2-53. The two primary safety concerns associated with rf fields are rf burns and injuries caused by dielectric heating.
1. T
 2. F
- 2-54. When a person is standing in an rf field, power in excess of what level will cause a noticeable rise in body temperature?
1. 5 milliwatts
 2. 10 milliwatts
 3. 15 milliwatts
 4. 20 milliwatts
- 2-55. When working aloft, what safety precaution(s) must be followed?
1. Tag out the antenna at the switchboard to prevent it from becoming operational
 2. Secure motor safety switches for rotating antennas
 3. Wear the proper oxygen breathing apparatus when working near a stack
 4. All the above